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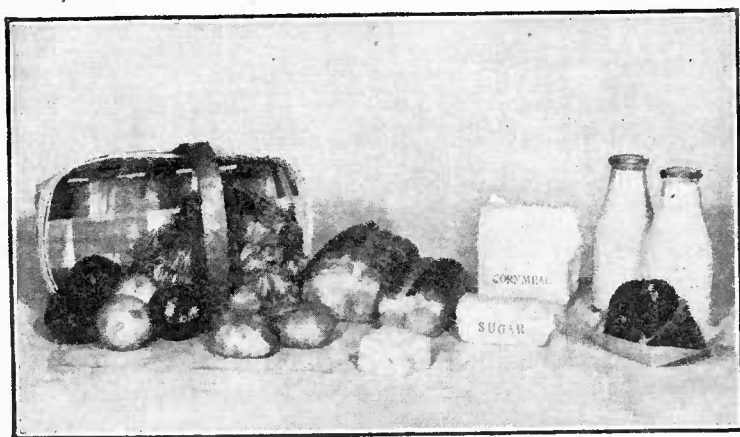
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FARMERS' BULLETIN 808

HOW TO SELECT FOODS

I. WHAT THE BODY NEEDS



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UNITED STATES
DEPARTMENT OF AGRICULTURE

THIS BULLETIN gives a simple method of selecting and combining food materials to provide an adequate, attractive, and economical diet. It does not attempt to make definite suggestions for obtaining food at low cost or to recommend any special foods or combinations of foods. It tells very simply what the body needs to obtain from its food for building its tissues, keeping it in good working order, and providing it with fuel or energy for its muscular work. It shows in a general way how the different food materials meet these needs and groups them according to their uses in the body. It suggests that, by remembering these groups and having them all suitably represented in the daily diet, the housekeeper can easily plan attractive meals which meet the needs of her family without waste of money or material.

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I. WHAT THE BODY NEEDS.

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HOW can the housekeeper tell whether she is providing the food which her family needs and is getting the best possible returns for the money she spends? Unfortunately, the price she pays for food is no test of the nourishment it yields to the body. Tomatoes at 5 or 10 cents apiece in winter do not build body tissues nor furnish fuel for the body engine any better than those at 5 cents a quart in summer, nor does fancy capon nourish the healthy body more satisfactorily than fowl at half the price. Appetite is not always a safe guide. A child's appetite might be satisfied with a diet of nothing but sugar, but this certainly would not be good for him. Neither can hunger and its satisfaction always be relied on. A bulky diet of potatoes or bananas alone would soon make a person feel that he had eaten enough, but would not furnish all that the body needs.

Evidently what a person who plans meals ought to know is what things the body needs in its food and how these needs can be filled by the ordinary food materials. Different kinds or classes of foods serve different uses in the body, and the housekeeper should choose those which will serve all these uses without waste.

THE DAY'S FOOD.

A man who does fairly hard muscular work would be likely to get the food which his body needs if supplied daily with such a combination of foods as the following:

- 2 pounds (fresh weight) of vegetables and fruits, of which part may be used in canned or dried form.
- 12 ounces of food from a class which may be called "meat and meat substitutes," that is, moderately fat meats, poultry, fish, eggs, and cheese, or 8 ounces of these foods and $\frac{1}{2}$ pint of milk. If very fat meats like bacon and salt pork are included in either of these allowances there will not be enough protein. For this reason these meats are considered interchangeable with the fats.

12 ounces of bread having about the same food value as 9 ounces of such cereal products as flour, oatmeal, corn meal, and rice.

3 ounces, or about $\frac{1}{4}$ cup, of butter, oil, meat drippings, or other fat.

3 ounces, or about $\frac{1}{3}$ cup, of sugar, or $\frac{1}{2}$ cup of honey or sirup, or an equivalent amount of some other sweet.

A man who works hard out of doors all day probably would need more food than this, and one who sits all day at his desk would need less. The amounts given are suitable for a man who, like a salesman in a store, walks about more or less and does more or less lifting or other work requiring about the same expenditure of energy.

A family consisting of a man and a woman who do moderately hard muscular work and three children—say, between 3 and 12 years of age—would get the food they require if supplied daily with:

10 pounds (fresh weight) of vegetables or fruits, part of which may be used in canned or dried form.

One of the two following, the choice depending on the age of the children: Two quarts of milk and $1\frac{1}{2}$ pounds of meats or meat substitutes; 3 quarts of milk and 1 pound of other foods taken from the meat and meat-substitute group.

3 pounds of bread, which has about the same value as $2\frac{1}{4}$ pounds of such foods as flour, oatmeal, corn meal, rice, or hominy.

1 to $1\frac{1}{4}$ cups or about 9 ounces of fat, which may be all butter or part butter and part oil, drippings, or other fat (a weekly allowance of about 4 pounds), or an equivalent amount of such fat foods as bacon, cream, chocolate, and oily nuts.

$1\frac{1}{4}$ cups or about 10 ounces of sugar (a weekly allowance of about $4\frac{1}{2}$ pounds), or an equivalent amount of honey, sirup, candy, or some other sweet.

This rather rough calculation is based on the assumption that cereals contain, on the average, about 12 per cent protein (see p. 7, B), 1 per cent fat, and 75 per cent carbohydrates, and that 1 pound of bread contains about $\frac{3}{4}$ of a pound of cereal; that butter, oil, lard, and other fatty foods average 90 per cent fat; that fresh fruits and fresh and root vegetables average about $\frac{1}{2}$ per cent protein and 10 per cent carbohydrates, with negligible quantities of fat; and that meats, fish, eggs, cheese, etc., as purchased, may be considered to average about 14 per cent each of protein and fat. The estimate also assumes that all the fat obtained with the meats, etc., is utilized, being either eaten with the meat or saved for use in cookery. Under these conditions the fuel value of the diet would be at least 11,000 calories per family per day, which would insure 3,000 calories net per man per day; the protein value would be about 330 grams per family, or 100 grams per man per day.

The materials in such a ration are shown in figure 1. The cereals include $1\frac{1}{2}$ pounds of bread, $1\frac{1}{2}$ cups or about 6 ounces of rolled oats, and $1\frac{1}{2}$ cups or $\frac{3}{4}$ pound of flour for use in cooking. The meat and meat-substitute group includes 2 quarts of milk, 1 pound of beef, and 4 eggs. The food value of the ration pictured on the title-page is practically the same as in figure 1, but there more bread is used and a little more meat is given to make up for the eggs shown in figure 1.

The combinations of food materials shown in these pictures are no better than many others, but by studying them in connection with what is said in the text the housekeeper may understand better how to make wise combinations of her own.

Cereal foods form a very wholesome and economical basis for the diet, whether used as a breakfast dish, as flour or meal in bread and cakes, or in other ways. The combination of foods shown in figure 1 might be called a medium-cereal ration. Cereals might have been used more freely without making the diet one-sided or unattractive and at the time the cost would probably have been lowered. On the other hand, a diet equally nourishing and wholesome might be planned with less cereal, but this would make it necessary to increase the amount of the more costly foods, such as meat, fruits, and vegetables.



FIG. 1.—A day's food for a family of five.

Whenever cereals are used in generous proportions in the diet it is most important that they be made as attractive as possible. This means good bread, well-cooked and carefully salted breakfast cereals, and inexpensive but well-made and seasoned cakes and puddings. Rice, macaroni, and hominy can often be made more appetizing and nutritious by combining with them small amounts of materials which are not so cheap and have more distinctive flavors. Among these are meat and cheese, and onion, tomato, and other seasoning vegetables. Examples of such combinations are rice and meat, meat pie, or meat with dumplings; macaroni and cheese; tomatoes cooked with bread crumbs or rice; and cereal and fruit puddings, or cereal and milk puddings.

Food materials, such as those shown in the pictures, may be combined into three meals in many ways. The following meals are given not because they are recommended above many others that might be used, but simply to show that such foods can be combined into dishes such as are commonly used in American homes.

SAMPLE MEALS FOR A FAMILY.

(Man, woman, and three small children.)

BREAKFAST.

Fresh fruit 2 pounds (equivalent to 4 medium-sized oranges or 5 medium-sized apples) or 6 to 8 ounces of dried fruits (equivalent to 20 to 25 prunes).

Cereal breakfast food, 6 ounces before being cooked, or about 2 pints after it is cooked. The equivalent in food value in puffed or flaked ready-to-eat cereals would be 5 or 6 cups.

Top milk on cereal, $\frac{1}{4}$ cup for each person.

Sugar on fruit, on cereal, or in coffee, 3 level tablespoons, or $1\frac{1}{2}$ ounces.

Bread, 8 slices, or 8 ounces.

Butter, $1\frac{1}{2}$ ounces, or 3 cubic inches.

An egg or 2 ounces of meat, fish, or poultry for each older person, and a glass of milk for each child.

DINNER.

Meat, or fish, $\frac{1}{4}$ pound per grown person; or, for each child, an egg or a glass of milk. Potatoes (5 medium-sized), 2 pounds.

Two other vegetables (turnips, carrots, spinach, corn, cauliflower, or other), 3 pounds. Bread, 8 slices, or 8 ounces.

Butter, $1\frac{1}{2}$ ounces, or 3 cubic inches.

Orange shortcake or other fruit pudding. Ingredients: Two cups flour, 3 tablespoons fat, $\frac{3}{4}$ cup milk, 5 oranges, and $\frac{1}{2}$ cup sugar.

SUPPER.

Vegetable souffle; milk for the younger children.

Bread, 8 slices, or 8 ounces.

Butter, $1\frac{1}{2}$ ounces, or 3 cubic inches.

Jelly.

One-half of a cake. (Ingredients for whole cake: One-fourth cup butter, $\frac{1}{2}$ cup sugar, 1 egg, $\frac{1}{2}$ cup milk, $1\frac{1}{2}$ cups flour, $2\frac{1}{2}$ teaspoons baking powder. Frosting made with 1 egg white and $\frac{1}{4}$ cup sugar.)

WHAT THE DAY'S FOOD SHOULD PROVIDE.

The meals here suggested would supply the following substances in about the right proportions to keep the family in healthful condition and to make the food taste good, providing they were well prepared.

A. *Mineral substances* in great variety (lime salts, compounds of phosphorus, iron, and others).—These are used by the body for building material and are found in all parts of it. They also produce substances within the body tissues which tend to offset acid substances produced in the tissues in the course of digestion of meats and cereals and serve many other important uses. Without fruits and vegetables the meals would be likely to lack certain mineral substances. Without milk they would be lacking in a mineral substance specially needed by children; that is, lime.

B. *Protein*.—Protein serves as fuel for the body and also provides a certain important element, nitrogen, which is needed in the case of

children for growth and in the case of both children and grown people to keep the body in repair. Without the meat or meat substitutes (including milk) the meals would be lacking in this body-building material.

C. *Starch*.—This is one of the chief fuels of the body and is supplied mainly by the cereal foods.

D. *Sugar*.—This serves as fuel for the body and to flavor the food. It is found in milk, fresh fruits, and many other materials, but unless small amounts of very sweet materials—sugar itself, sirup, or honey—are used, the diet is likely to be lacking in it.

E. *Fat*.—This serves as body fuel and also improves the flavor and texture of the food. It is present in meats, nuts, and many other foods, but unless small amounts of specially fat materials, like butter, oil, or cream, are used, the meals are likely to be lacking in it. Moreover, dishes cooked without a certain amount of fat and meals served without butter or some substitute seem, to most persons, dry and unpalatable.

F. *Cellulose*.—This is the material which makes up the framework of plants. It gives bulk to the diet and may tend to prevent constipation. Without the fruits and vegetables the meals would be lacking in this important element.

G. *Certain newly discovered ingredients frequently called vitamins*.—Although these are not yet thoroughly understood and although they seem to occur in only minute quantities, at least three kinds are now considered necessary for health and growth.

The so-called vitamin A is needed for normal growth, and without it children are likely to be sickly and underdeveloped. Among the common food materials, milk, egg yolk, and green leaf vegetables seem to be especially good sources of it. Vitamin B, or the anti-neuritic vitamin, prevents other disorders; it is found in almost all the common foods except such highly refined ones as white flour, cornstarch, sugar, and vegetable oils, and is usually supplied by the ordinary mixed diet that contains some vegetables, fruits, milk, eggs, and meat. Vitamin C, believed to be necessary to prevent scurvy, is sometimes found in freshly drawn milk, but is more abundant in various vegetables and fruits, among those most commonly mentioned being tomatoes, carrots, potatoes, oranges, and lemons. Heat seems to lessen its disease-preventing power in some foods, including milk, and so when children are fed with pasteurized or cooked milk they should be given orange juice or some other sure source of vitamin C.

H. *Flavorings and condiments*.—In most families some materials are used in preparing or serving food which add to the attractiveness of the meals without furnishing the body any nourishment. Among these are salt, pepper, vinegar, spices, seasoning herbs, horse-radish,

flavoring extracts, and many other materials often spoken of as "condiments." These are not discussed at length, because they are not absolutely needed by the body. They may, however, be very useful in making an otherwise unattractive diet taste good. In fact, the secret of making inexpensive meals attractive lies largely in the skillful use of seasoning and flavors, and in this way they may well be worth the cost they add to the diet even if they do not increase its actual food value.

GROUPING FOODS TO SHOW THEIR USES.

Perhaps as easy a way as any to select the right foods is to group the different kinds according to their uses in the body and then to make sure that all the groups are represented regularly in the meals. Fortunately no more than five groups need be considered: (1) Fruits and vegetables; (2) meats and other protein-rich foods; (3) cereals and other starchy foods; (4) sweets; and (5) fatty foods. The materials under each of these heads have their special uses. It will be helpful, therefore, for the housekeeper to form the habit of thinking of the many different kinds of food which she handles as grouped in some such way as the following:

Group 1.—Fruits and vegetables, such as apples, bananas, berries, citrus fruits, spinach and other greens, turnips, tomatoes, melons, cabbage, green beans, green peas, green corn, and many other vegetables and fruits. Without these the food would be lacking in mineral substances needed for building the body and keeping it in good working condition; in acids which give flavor, prevent constipation, and serve other useful purposes; and in vitamins. By giving bulk to the diet they make it more satisfying to the appetite.

Group 2.—Meat and meat substitutes, or protein-rich foods: Milk, moderately fat meats, poultry, fish, cheese, eggs, dried legumes (beans, peas, lentils, cowpeas, peanuts), and some of the nuts. These are sources of an important body-building material, protein. In the case of children part of the protein food should always be whole milk, because the milk fat is the best source of the growth-promoting vitamin A.

Group 3.—Foods rich in starch: Cereals (wheat, rice, rye, barley, oats, and corn) and potatoes (white and sweet). Cereals come near to being complete foods, and in most diets they supply more of the nourishment than any other kind of food. It is not safe, however, to live only on cereals. The grains may be simply cleaned and partially husked before cooking, as in cracked wheat and Scotch oatmeal; they may be ground into flour and used as the basis of breads, cakes, and pastry; they may be partially cooked at the factory, as in many breakfast preparations; or they may be prepared in the form of such pastes as macaroni and noodles. In all these forms they

furnish the body with the same general materials, though in different proportions. Some of the vitamins are found in the preparations containing the bran and the germ of the grain. When the diet is poor in milk, vegetables, and fruits, it is wise to use some of these coarser cereal foods.

Group 4.—Sugar (granulated, pulverized, brown, and maple), honey, molasses, sirup, and other sweets. Unless some of the fuel is in this form the diet is likely to be lacking in flavor.

Group 5.—Foods very rich in fat: Bacon, salt pork, butter, oil, suet, lard, cream, and the like. These are important sources of body fuel. Without a little of them the food would not be rich enough to taste good.

Some food materials really belong in more than one group. Cereals, for example, supply protein as well as starch; while in addition to starch, potatoes supply the mineral matters, acids, cellulose, and vitamins, for which they are especially valuable; and most meat supplies fat as well as protein. For the sake of simplicity, however, each material is here grouped according to the nutrient for which it is usually considered most valuable. These points are all brought out in more detail in other bulletins which discuss the special groups.

The lists given below show some of the common food materials arranged in these five groups. If the housekeeper will consult them in planning meals until she has learned where each kind of food belongs, she will have taken the first step toward providing a diet which will supply all the food needs of her family. It will be only one step, to be sure, but it should prevent two mistakes—that of serving meals that have not sufficient variety, and that of cutting down in the wrong places when economy either of time or money is needed:

GROUP 1.—Foods depended on for mineral matters and vegetable acids.

Fruits:

Apples, pears, etc.
Bananas.
Berries.
Melons.
Oranges, lemons, etc.
Etc.

Vegetables:

Salads—lettuce, celery, etc.
Potherbs or “greens.”
Potatoes and root vegetables.
Green peas, beans, etc.
Tomatoes, squash, etc.
Etc.

GROUP 2.—Foods depended on for efficient protein.

Milk: Whole milk, skim milk, buttermilk.
Cheeses of all kinds.
Eggs.
Meat.

Fish.
Poultry.
Game.
Peanuts.
Soy beans.

GROUP 3.—*Foods depended on for starch.*

Cereal grains, meals, flours, etc.	Cakes, cookies, starchy puddings, etc.
Cereal breakfast foods.	Potatoes and other starchy vegetables.
Bread.	
Crackers.	
Macaroni and other pastes.	

GROUP 4.—*Foods depended on for sugar.*

Sugar.	Candies and sweet chocolate.
Molasses.	Fruits preserved in sugar.
Sirups.	Jellies, jams, and marmalades.
Honey.	

GROUP 5.—*Foods depended on for fat.*

Butter and butter substitutes.	Table and salad oils.
Cream.	Salt pork and bacon.
Lard, suet, and other cooking fats.	Chocolate.
	Oily nuts.

Thinking of foods according to the group to which they belong or according to the nutrient which they supply in largest amount will help the housekeeper to see whether in the meals she plans she has supplied all the different materials needed, especially whether there is the necessary, though small, amount of tissue-building mineral matters and vitamins (group 1), and of efficient protein (group 2). When she has made sure that these are present, she may safely build up the bulk of the diet from starchy foods, fats, and sweets in almost any proportion that suits her supplies or her purse. By means of this grouping she will be reminded that meals consisting only of cereal mush (group 3) served with butter (group 5) and sirup (group 4) would not be a complete ration, and would almost surely be lacking in body-building material, because there are no foods from either group 1 (fruits and vegetables) or group 2 (protein rich). It will become clear, also, that a school lunch of a kind far too frequently served, consisting of bread and cake, is lacking in the same way, and that a glass of milk (group 2) and an apple or an orange (group 1) would make it far more nearly complete. She will learn the wisdom of serving fruit (group 1) rather than a whipped-cream dessert (group 5) or a suet pudding (groups 3 and 5) after a course including a generous portion of fat meat (groups 2 and 5).

The grouping will also help the housekeeper who wishes to save money or time to simplify her meals without making them one-sided or incomplete. For example, if she has been serving bread, potatoes, and rice or hominy in one meal, she will see that one or even two of them may be left out without omitting any important nutrient, providing a reasonable quantity of the one or two remain-

ing is eaten. It will show her that a custard which is made of milk and eggs, two foods from group 2, would hardly be needed after a meal in which a liberal supply of meat had been served, provided one ate heartily of all, and that a child does not need milk at the same meal with an egg or meat. It will suggest that baked beans or other legumes, or thick soups made of legumes, are occasional substitutes for meat rather than foods to be eaten with meat.

This method of planning prevents substituting one food for another which has an entirely different use. It prevents the housekeeper, for example, from trying to give a pleasant variety by using an extra amount of cakes or sweet desserts in the place of fruit and vegetables when the latter seem difficult to obtain. Sugar is nutritious and has a valuable place in the diet, but the nourishment it furnishes is fuel and not the body-building and body-regulating materials which are found in fruits and vegetables, and it is not safe to cut them out, even if the meals can be made attractive without them. Fortunately, they are not always so hard to obtain as it seems, and the wise housekeeper will make every effort to supply them. In general, economy within each group is safer than using an inexpensive food from one group in place of an expensive one from another group.

Thinking in terms of these groups will also help when laying in supplies. Cured and canned meats, dried and canned fish, and some kinds of cheese keep for a long time and can be used in place of fresh meat in an emergency. Fruits and vegetables put up when they are abundant will help to supply this important group in winter.

HOW TO TELL WHETHER OR NOT THE DIET IS ADEQUATE.

It is very hard for a housekeeper to know exactly how much of each of the food substances or nutrients her family needs or exactly how much of each she is giving them. The exact amount which each person needs depends upon age, sex, size, and amount of work done with the muscles. An elderly person, or one of quiet habits, needs less food than a vigorous, young one; a large person more than a small one; a man more than a woman; grown persons more than children; and a farmer working in the hayfield, a mechanic, or a football player more than a man who sits at his desk all day.

In order to calculate exactly how much starch, sugar, fat, protein, etc. (or, what is equivalent to this, how much protein and energy) the family needs one would have to know exactly how much muscular work each member was performing and also exactly how much of the different nutrients each food contained and exactly how much each person would eat. This, of course, would mean a great deal of figuring. Fortunately, such exactness is not necessary in ordinary life. If a little too much or too little of one nutrient is provided at

a single meal or on a single day a healthy body does not suffer, because it has ways of storing such a surplus and of using its stored material in an emergency. The danger would come if the diet taken week in and week out always provided too much or too little of some one nutrient. Against this danger the housekeeper can more easily protect her family.

Habit and custom help greatly, because they usually are based on what the experience of generations has proved is wise and healthful, though, of course, there are bad habits and outgrown customs in food as in everything else. Good food habits, it must be remembered, include more than cleanliness and order in everything that has to do with food and meals and leisurely ways of eating. Equally important are a liking for all kinds of wholesome foods, even if they have not always been used in one's home or neighborhood, and eating reasonable amounts, without being either greedy or overdaunt. Every effort should be made to train children in such good food habits. If older people have not learned them, they, too, should try to do so, for such things are very important not only to health but also to economy. To refuse to eat some wholesome dish simply because one is not accustomed to it may prevent the use of some very desirable and economical food.

The health and appearance of the family are a good test of the wholesomeness of their diet. If they are strong, well developed for their ages, free from ailments, and full of energy and ambition, one may safely say their food agrees with them. But if they are listless and ailing, or not so well developed either physically or mentally as they should be, and if a competent physician finds that there is no special disease to account for these bad symptoms, a mother may well ask herself if the food is right, and if not, how she can make it so.

In such cases she might, for instance, apply for information on food and diet to her State leader in agriculture and home economics and to the home-economics department of her State agricultural college.

GENERAL SUGGESTIONS.

It is believed that it is impossible to plan the meals for a family wisely without at least as much knowledge of how different kinds of food serve the body as this bulletin has given and that the safest short cut to good planning lies in considering foods in the five groups here described. Ways of making economical use of the materials in each group can not be discussed in this bulletin, but a few general suggestions for getting the most for one's money in the matter of food may be made here.

Use cereals (flour, meal, cereal breakfast foods, etc.) freely, taking pains to prepare them with great care and to vary the kind used from day to day if necessary to keep people from tiring of them.

A quart of whole milk a day for each child, to be used as a beverage and in cookery, is not too much.

Though skim milk should never be substituted for whole milk as the principal food in a child's diet, it is as valuable as whole milk as a source of protein and mineral matters in the general diet.

Except in the case of milk for children, the amount needed of foods specially useful for body-building purposes—that is, meats and meat substitutes, fruits, and vegetables—is not large, but what is needed is needed very much.

Buy nonperishable materials in quantities if better prices can be obtained and there is a good storage place in the home. Neighbors can sometimes club together to get lower rates.

Try to make the dishes served of such size that there will be enough to satisfy the appetite of the family and no unnecessary table and plate waste.

Notice whether anything usable is thrown away with the garbage.

Many inexpensive materials can be made attractive and the diet can be pleasantly varied by a wise use of different flavorings.

"Finicky" tastes in food often prevent the use of many valuable materials which might be the means of saving money.

Good food habits are an important part of personal hygiene and thrift. Children get such habits by having suitable amounts of suitable foods served to them and then being expected to eat what is set before them.

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